

REMARKS

Figures

The Drawings have been objected to under 37 CFR 1.83(a) as failing to show every feature of the invention specified in the claims. More specifically, the Office Action argues that the “particles” as claimed in claim 1 and 31 are not shown in the drawings. Applicant respectfully disagrees.

Applicant respectfully submits that the drawings clearly show every feature of the invention specified in the claims. Specifically, Figures 1 and 2 clearly show particles contained within wick 120 and boiling structure 130. Accordingly, Applicant requests removal of the objection.

Claim Objections

Claim 17 has been objected to as being of improper dependent form for failing to further limit the subject matter of a previous claim. Claim 17 has been canceled. Accordingly, Applicant respectfully requests removal of the claim objection with respect to claim 17.

Summary

Claims 15-16 and 18-21 and 25-38 stand in this application. Claims 1-15 and 17 have been canceled. Claims 15, 20 and 28 are currently amended. Support for the current amendments may be found at least at page 5 of Applicant’s Specification. No

new matter has been added. Favorable reconsideration and allowance of the standing claims are respectfully requested

35 U.S.C. § 112

Claim 28 has been rejected under 35 U.S.C. § 112 for not particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention. Applicant respectfully traverses the rejection based on the above amendments. These claims have been amended in accordance with the Office Action, and removal of this rejection is respectfully requested. Applicant further submits that the above amendments are made to overcome a § 112 rejection and are not made to overcome the cited references. Accordingly, these amendments should not be construed in a limiting manner.

35 U.S.C. § 102

At page 4, paragraph 1 of the Office Action claims 15-19, 25-30 and 32-37 stand rejected under 35 U.S.C. § 102 as being anticipated by Calhoun et al., United States Patent Number 4,351,388 (hereinafter "Calhoun"). Applicant respectfully traverses the rejection, and requests reconsideration and withdrawal of the anticipation rejection.

Applicant respectfully submits that to anticipate a claim under 35 U.S.C. § 102, the cited reference must teach every element of the claim. *See* MPEP § 2131, for example. Applicant submits that Calhoun fails to teach each and every element recited in claims 15-19, 25-30 and 32-37 and thus they define over Calhoun. For example, with respect to claim 15, Calhoun fails to teach, among other things, the following language:

a first structure having a first thermal resistance and including particles of a first size having an average diameter greater than about 50 μm to convert some of the coolant from liquid to vapor;
a second structure around the first structure to wet the first structure with the coolant from multiple sides and having a second thermal resistance that is greater than the first thermal resistance and including particles of a second size, the second size is less than the first size; and
a plurality of outer walls to enclose the coolant, the first structure, and the second structure in an air tight manner.

According to the Office Action, this language is disclosed by Calhoun at Figures 2 and 3.

Applicant respectfully disagrees.

Applicant respectfully submits that claim 15 defines over Calhoun. Calhoun at the given cite, in relevant part, states:

Heat is applied to the evaporator end of the envelope 11 causing the working fluid to evaporate from the thread grooves 17 at this end of the heat pipe. The vapor follows the thread grooves 17 circumferentially until it arrives at the axial vapor channel 23 and it travels in this channel through the transport or adiabatic section to the condenser end of the heat pipe, due to differential pressure. Heat is removed from the vapor at the condenser end of the heat pipe causing the vapor to condense on the groove walls. The condensate travels to the screen sheath 15, passes through the sheath into the wick core 14, and moves to the evaporator end by capillary action, thereby completing the cycle.

As indicated above, Calhoun arguably discloses a heat pipe that relies on heat and differential pressure to vaporize the coolant and then condense the vapor. Calhoun at Figures 2 and 3 arguably discloses a heat pipe with outer envelope 11 and a stainless steel screen structure 15 containing wick core 14 which is composed of glass beads. By way of contrast, the claimed subject matter discloses “a first structure having a first thermal resistance and including particles of a first size having an average diameter greater than about 50 μm to convert some of the coolant from liquid to vapor” and “a second structure around the first structure to wet the first structure with the coolant from multiple sides and having a second thermal resistance that is greater than the first thermal resistance and

including particles of a second size, the second size is less than the first size.” The claimed subject matter further comprises “a plurality of outer walls” that encloses the coolant, the first structure and the second structure.

Applicant respectfully submits that Calhoun fails to teach or suggest a first and a second structure containing particles of a first and second size, respectively. The Office Action fails to cite to a portion of Calhoun that shows a first structure containing particles of a first size. The Office action relies on outside envelope 11 to teach a plurality of outer walls and stainless steel screen 15 containing wick core 14 to disclose a second structure, however, there is no cited portion of Calhoun that teaches a first structure containing particles of a first size. Furthermore, Calhoun arguable does not disclose particles of a first size and a second size, the second size being less than the first size. The only particles disclosed within the cited portions of Calhoun are the glass beads contained within wick core 14 of stainless steel screen 15. These glass beads are of a standard average diameter. Applicant respectfully submits that Calhoun fails to disclose another structure containing particles of a different size.

Applicant respectfully submits that the Office Action fails to cite a teaching or suggestion within Calhoun to the difference in thermal resistance between the first and second structures. The Office Action argues that the stainless steel screen 15 has a greater thermal resistance than the wick core 14. Applicant respectfully submits that the Examiner has failed to provide a teaching or suggestion from Calhoun or any other reference to verify this statement. Moreover, Applicant argues that stainless steel screen 15 and its wick core 14 constitute a single structure. Applicant respectfully submits that Calhoun fails to teach a second structure containing particles and having a thermal

resistance different than that of stainless steel screen and wick core 14. Consequently, Calhoun fails to disclose all the elements or features of the claimed subject matter.

Accordingly, Applicant respectfully requests removal of the anticipation rejection with respect to claim 15. Furthermore, Applicant respectfully requests withdrawal of the anticipation rejection with respect to claims 16, 18 and 19, which depend from claim 15 and, therefore, contain additional features that further distinguish these claims from Calhoun.

Claims 25 and 33 recite feature similar to those recited in claim 15. Therefore, Applicant respectfully submits that claims 25 and 33 are not anticipated and are patentable over Calhoun for reasons analogous to those presented with respect to claim 1. Accordingly, Applicant respectfully requests removal of the anticipation rejection with respect to claims 25 and 33. Furthermore, Applicant respectfully requests withdrawal of the anticipation rejection with respect to claims 26-30 and 33-37 that depend from claims 25 and 33, and therefore contain additional features that further distinguish these claims from Calhoun.

35 U.S.C. § 103

At page 5, paragraph 2 of the Office Action claims 20-21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Calhoun in view of United States Patent Number 6,564,860 to Kroliczek et al. (hereinafter “Kroliczek”). Applicant respectfully traverses the rejection, and requests reconsideration and withdrawal of the obviousness rejection.

Claim 20 recites features similar to those recited in claim 15. Applicant respectfully submits that he is unable to find the claim language not taught by Calhoun within the cited portions of Kroliczek. Therefore, Applicant respectfully submits that claim 20 is not obvious and is patentable over Calhoun and Kroliczek for reasons analogous to those presented with respect to claim 1. Accordingly, Applicant respectfully requests removal of the obviousness rejection with respect to claim 20. Furthermore, Applicant respectfully requests withdrawal of the obviousness rejection with respect to 21 that depends from claim 20, and therefore contains additional features that further distinguish these claims from Calhoun and Kroliczek, whether taken alone or in combination.

At page 5, paragraph 3 of the Office Action claims 31 and 38 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Calhoun. Applicant respectfully traverses the rejection, and requests reconsideration and withdrawal of the obviousness rejection. If an independent claim is non-obvious under 35 U.S.C. § 103, then any claim depending therefrom is non-obvious. *See* MPEP § 2143.03, for example. Accordingly, Applicant respectfully requests withdrawal of the obviousness rejection with respect to claims 31 and 38 that depend from claims 25 and 33, respectively, and therefore contain additional features that further distinguish these claims from the cited references.

Conclusion

For at least the above reasons, Applicant submits that claims 15-16 and 18-21 and 25-38 recite novel features not shown by the cited references. Further, Applicant submits that the above-recited novel features provide new and unexpected results not recognized

by the cited references. Accordingly, Applicant submits that the claims are not anticipated nor rendered obvious in view of the cited references.

Applicant does not otherwise concede, however, the correctness of the Office Action's rejection with respect to any of the dependent claims discussed above. Accordingly, Applicant hereby reserves the right to make additional arguments as may be necessary to further distinguish the dependent claims from the cited references, taken alone or in combination, based on additional features contained in the dependent claims that were not discussed above. A detailed discussion of these differences is believed to be unnecessary at this time in view of the basic differences in the independent claims pointed out above.

It is believed that claims 15-16 and 18-21 and 25-38 are in allowable form. Accordingly, a timely Notice of Allowance to this effect is earnestly solicited.

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Examiner: Wilson, Gregory A.
TC/A.U. 3749

The Examiner is invited to contact the undersigned at 724-933-9338 to discuss any matter concerning this application.

The Office is hereby authorized to charge any additional fees or credit any overpayments under 37 C.F.R. § 1.16 or § 1.17 to deposit account 50-4238.

Respectfully submitted,

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/John F. Kacvinsky/

John F. Kacvinsky, Reg. No. 40,040
Under 37 CFR 1.34(a)

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